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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Federal-State Joint Board on Universal Service	))	CC Docket No. 96-45
	)	
Forward-Looking Mechanism For High Cost Support For Non-Rural LECs	))	CC Docket No. 97-160 (DA-98-848)

JOINT COMMENTS OF BELLSOUTH TELECOMMUNICATIONS, INC., U S WEST, INC., AND SPRINT LOCAL TELEPHONE COMPANIES TO COMMON CARRIER BUREAU REQUEST FOR FURTHER COMMENT ON SELECTED ISSUES REGARDING THE FORWARD-LOOKING ECONOMIC COST MECHANISM FOR UNIVERSAL SERVICE SUPPORT

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SUMMARY

The Joint Sponsors of the Benchmark Cost Proxy model respond to the issues set forth in the Public Notice:

Customer Location Data-- the Joint Sponsors believe that the majority of commercially available geocode data or databases have similar shortcomings—"holes" in the data for rural, sparsely populated areas. Possible alternatives are global positioning devices, however, such an approach would require significant effort and cost. A potential compromise approach would be to use terminal (pedestal) location information which may be available from some LECs.

Maximum Copper Loop Length—the BCPM utilizes a Carrier Serving Arrangement (CSA) architecture that uses a 12,000-foot design standard for copper loops. Virtually all telephone companies engineer to the CSA standard and equipment manufacturers design their equipment that conform to CSA standards. In contrast, the HAI 5.0 uses a non-standard 18,000 foot maximum copper loop in design architecture and the exclusive use of the RPOTS card will deliver sub-standard service to customers with loops in excess of 12,000 feet.

Defining Households—the appropriate universe of households that should be assumed for purposes of calculating the forward-looking cost of providing supported services is total housing units. While the telephone network constructed should include the costs related to providing service to all housing units, universal support should only be provided to support households or occupied housing units.

Depreciation—depreciation lives and salvage values within the FCC-authorized range are not appropriate for use in a cost model because they fall short of reflecting forward-looking economic costs in the current competitive environment. BCPM uses the straight-line method to

calculate depreciation expense based on the economic life of the plant that is appropriate for use in a forward-looking cost study.

Cost of Installing Outside Plant—the Joint Sponsors provide an analysis of Dr. Gabel's paper regarding the estimation of switching and cable based costs based on publicly available data.

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BellSouth Telecommunications Inc., Sprint Local Telephone Companies and US West, Inc. (hereinafter "Joint Sponsors"), joint sponsors of the Benchmark Cost Proxy Model ("BPCM"), hereby submit the following comments in response to the Public Notice released on May 4, 1998.[1]

The Public Notice affords parties an opportunity to update their comments regarding the input values that should be used in the federal model and in setting the revenue benchmark. The Joint Sponsors welcome the opportunity to provide the Commission with their response to input

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[1] "Common Carrier Bureau Request Further Comment On Selected Issues Regarding The Forward-Looking Economic Cost Mechanism For Universal Service Support," Public Notice, DA 98-848, released May 4, 1998. (hereinafter "Public Notice") In addition to these joint comments, the Joint Sponsors will file individual comments on issues specific to their companies.

issues set forth in the Public Notice. To facilitate the Commission's review the issues are discussed in the same order that they are presented in the Public Notice.

1. Customer Location Data

In its Public Notice dated May 4, 1998 the Common Carrier Bureau requested comment regarding customer location data for possible use in the forward-looking economic cost mechanism for universal service support. The Bureau noted that the Commission had previously requested comment on the use of geocode data (latitudinal and longitudinal coordinates) as a means of determining customer location.

In the May 4th Notice, the Bureau specifically requested comment on:

1) Alternative sources of geocode data, or databases that could be used to develop such data.
2) Global positioning satellite devices (GPS) and the relative costs/benefits of using such devices.
3) Other possible methods and technologies for geocoding customer locations.

With regard to alternative sources of geocode data or databases, the BCPM Sponsors believe the majority of commercially available databases possess the same shortcoming as the Metromail/Dun & Bradstreet database(s) used by the HAI Sponsors. Specifically, because these databases are dependent on mailing addresses, they will possess large "holes" in the very areas that are of most concern for universal service: rural, sparsely-populated areas. Material provided by the HAI Sponsors indicates that geocoding "success rates" vary dramatically from low-density to high-density areas, and that the nationwide average for "successful" geocoding in low-density areas is an unacceptable 15%. Furthermore, the fact that the majority of commercially available databases locate, in essence, *mailboxes*, and not *houses* may further compromise these "success rates".

With regard to GPS devices, the BCPM Sponsors agree that a set of longitudinal/latitudinal coordinates based on actual customer locations could, in theory, be obtained using these devices. Such an undertaking would obviously require a significant effort and investment of time on the part of the party responsible for obtaining said coordinates. It is highly unlikely that existing LECs currently have such information widely available. However, the above-mentioned shortcomings of commercial databases would clearly be avoided by such an undertaking.

The Commission should note, however, that there are a number of methods for obtaining accurate location data. For example, certain LEC specific E911 databases might provide sufficient (and complete) information needed by a proxy model. To the extent that any LEC might be required to provide actual location data to the Commission (or to a fund administrator), the BCPM Sponsors believe it would be wrong to insist that GPS devices be the only methodology use. LECs should be allowed to pursue whatever locating methodology can provide the needed data, at the required level of accuracy, in the most efficient and cost-effective manner possible.

An alternative approach the Bureau might consider is the use of LEC engineering maps which, instead of identifying the latitudinal/longitudinal coordinates of customer locations, identify coordinates for *terminal locations*. This approach has significant advantages in that it represents an appealing combination of accuracy and efficiency. Because terminal location is a standard part of any network layout, and terminals must be maintained, it is quite possible that many LECs already have such maps in their possession. This would greatly reduce both the start-up time and the cost associated with location-identification. More importantly, actual terminal locations will accurately reflect real-world customer dispersion. Since both proxy models treat the drop portion of the loop separately from distribution, (HAI Model treats drop as an input, BCPM as a calculation but it is added to a separately-calculated distribution length), the terminal locations will reflect the needed measure of relative distance between customers AND relative distance from the wire center. The key to using terminal locations is to maintain the relative location, and not distort location and distance-between-terminals in a concession to "modeling convention."

The BCPM Sponsors believe the Bureau could benefit from an investigation as to the availability of existing terminal-location data. It is possible that substantial amounts of this data currently can be found in LEC engineering records, and more importantly, it is possible that the availability of this information is less *density-sensitive* than customer-location data. (In other words, "success rates" might be lower in more rural areas *but not as low* as customer location "success rates".)

In addition, it is certainly an option to combine the two approaches and use GPS systems to augment existing LEC data on terminal location. The actual task of locating terminals would be much more manageable than locating customers since the number of terminals is significantly smaller. Costs and time-investment would be lower, and it is arguable as to whether there would be any detectable loss of accuracy reflected in the final model output.

2. Maximum Copper Loop Length

The BCPM utilizes a Carrier Serving Arrangement (CSA)[2] architecture which utilizes a 12,000 foot design standard for copper loops. Due to the fact that virtually all telephone companies engineer to the CSA standard, equipment manufacturers design their equipment with the CSA standards in mind.

Both the BCPM and HAI models use the DSC Litespan® 2000 Digital Loop Carrier system. The standard line card used in the remote terminal is the RPOTS card, which has a maximum serving length of 12,000 feet. Beyond this length an "extended range" line card must be used. There are two types of extended range cards in the Litespan®2000 line. The RUVG2 card employs a fixed 2db of gain, and can extend the range of the DLC Remote Terminal to approximately 18,000 feet. The REUVG card provides up to 6db of gain, adjustable in 1db increments. The current list price of these line cards is as follows:

RPOTS	$570
RUVG2	$842
REUVG	$1,110

The BCPM3 model uses the RPOTS card for loops up to 12,000 feet, and the REUVG card for loops beyond this distance. To the best of our knowledge, the HAI 5.0 uses the RPOTS card for all loops regardless of distance. Since the HAI 5.0 uses a non-standard 18,000 foot maximum copper loop in its design architecture the exclusive use of the RPOTS card will deliver sub-standard service to customers with loops in excess of 12,000 feet. Between 12,000 and

[2] See AT&T Outside Plant Engineering Handbook, August 1994, Section 13, for a description of the CSA and its use in the design of Digital Loop Carrier systems.

18,000 feet the HAI must, at minimum, be modified to incorporate the RUVG2 card which is approximately 50% more costly. Since the HAI 5.0 often designs loops in excess of 18,000 feet, all loops exceeding this distance must be served by the REUVG line card.

3. Defining "Households"

The appropriate universe of "households" that should be assumed for purposes of calculating the forward looking cost of providing the supported services is total housing units. Total housing units are appropriate due to the ILEC's current obligation as carrier of last resort. An ILEC's obligation to serve all customers in its current designated service areas will not be mitigated by this proceeding, and therefore, costs related to providing service to all housing units should be the basis for calculating universal service costs.

Additionally, new entrants seeking universal service support will be required to provide service throughout their entire designated service area in order to obtain designation as an eligible telecommunications carrier (ETC). These carriers will also have an obligation to serve customers throughout their designated service area. They should also be able to recover their costs of providing universal service through the universal service fund.

The HAI proponents claim that most unoccupied housing units or housing units without telephones are in remote areas. This statement is simply not true. The majority of unoccupied housing units are not located in remote areas. Instead, most of the unoccupied housing units without phone service are located in areas where telephone service is generally available to anyone who wants it. In these areas, local exchange companies engineer and design the plant as if each housing unit will eventually require telephone service. At any point in time in a geographic area, there are a number of households and a number of housing units that exceeds the number of households. The difference between the number of housing units and the number of households is commonly known as the vacancy rate. The current households can move to any of the existing housing units at any time and not affect the vacancy rate. While at any given time, it is true that 100% of the housing units may not need telephone service, the plant is engineered to accommodate all the housing units, because any of the existing housing units may be occupied at any time. It is not efficient to deploy telephone plant only when a particular housing unit becomes occupied. To ignore this reality would result in an understatement of the true cost of providing universal service.

BCPM builds telephone plant consistent with the recognition of the housing units as described above. BCPM takes a snapshot of a point in time and includes the census data counts for both the total housing units and the total households. The calculation of universal service cost per line is based on providing a telephone network connection to each housing unit. However, BCPM uses households (occupied housing units) for the calculation of universal service support, by only providing support to households. Therefore, a high cost rural area which includes only unoccupied housing units does not receive universal service support in the BCPM. Only those areas with occupied housing units receive universal service support.

In remote areas (i.e.- areas where telephone service is not currently provided), the cost of universal service should not be ignored. As the BCPM sponsors stated in their December 11, 1997 filing, the proxy models raise an important public policy regarding the meaning of the 1996 Act provisions that all customers in rural and high-cost areas have service and access to advanced service comparable to that in urban areas. Both models indicate that extending state-of-the-art wireline facilities to some customers can be very expensive. Public policy makers must weigh the costs of this mandate vs. the public benefits, as well as considering alternative methods or technologies for serving the remote rural customer.

Other alternatives include the remote customer bearing a portion of the cost to bring service to him, provisioning service at a lower transmission standard, and alternative technologies such as wireless or satellite. The BCPM model has a feature which allows the loop investment to serve any given customer to be capped at a user set amount. This feature should allow for a reasonable upper bound for loop cost while these policy issues are addressed.

4. Depreciation

The FCC has specified in the Universal Service Order that economic lives and future net salvage percentages are to be used in cost studies to calculate federal universal service support. Economic lives are the total revenue-producing lives of assets, and are appropriate for use in forward-looking economic cost studies to ensure that costs are recovered over a time period equal to the revenue-producing life of the plant.

a. Depreciation in the BCPM Model

Economic Lives and Future Net Salvage percentages that the companies have used in the BCPM Model are appropriate for use in calculating universal service costs. These parameters are appropriate to use in forward-looking cost studies.

The BCPM Model uses the straight line method, not an accelerated method, to calculate book depreciation expense for all accounts that are included in the cost studies. Approaches recognized by the FCC and used by the companies, such as Equal Life Group methodology, and use of appropriate Gompertz-Makeham Survivor Curves, and proper recognition of the deferral of income taxes, are incorporated into the model.

b. Factors Impacting Economic Life

Economic lives appropriately reflect the decline in the economic value of a company's assets. This loss of value may be caused by physical, technological and market forces. Physical forces (e.g., wear and tear, natural phenomenon, and accidental damage) eventually cause assets to deteriorate such that they are unusable or so that maintenance costs increase sufficiently to make it economical to replace the assets. Technological forces affect the value of an asset by generating improved equipment that requires less maintenance expenses and/or allows provision of new features and functions and thus, reduces the value of the older equipment. Market forces may lead to a decline in value of an asset by producing new competitive options that reduce the revenues that a firm can generate from its existing assets: e.g., entrants may offer the same service at lower cost by using new technology or offer new more desirable substitute services.

Existing assets were deployed in a public utility environment, based upon a regulatory promise that this investment would be fully recovered. In a monopoly environment, industry and regulators could manage costs and the introduction of new services and technologies by controlling and extending the lives of plant and equipment. This changed dramatically when passage of the Telecommunications Act of 1996 opened the local telecommunications marketplace to competition. As a result, existing equipment is becoming obsolete at a faster pace, thus reducing the overall economic value of the assets more quickly. It is now the marketplace that will determine whether the companies' future revenues will be adequate for full recovery of investment. Customer demands, as well as an ever-expanding competitive environment, further increase the pressure for a technologically advanced network. Economic lives must reflect the fact that replacement of equipment is necessary to make way for a more economic, efficient, and state of the art telecommunications infrastructure and to meet the competitive pressures within the marketplace. This will require using shorter lives than regulators have prescribed in the past.

Unprecedented advances in technology, especially computer technology and its integration into all facets of our lives, are driving the ever increasing demands of our customers. The use of new technology in the telecommunications infrastructure has been a major factor in helping meet customer demand economically. Fiber optics, digital switching and Synchronous Optical Network (SONET) are key technologies in the ongoing modernization of the network's infrastructure.

The rapid substitution of Digital Electronic Switching Systems for Analog Electronic Switching Systems will continue. It is driven by customer demand for new digital services and economic benefits due in part to capital and maintenance savings realized from the integration of digital loop carrier systems. Fiber in the feeder portion of the loop has demonstrated significant price performance benefits over copper, and is the economic choice for most feeder applications today. Continued increases in the long term price performance advantages of fiber over copper based systems will facilitate deployment of fiber in the loop.

c. Life Analysis Methods

Numerous methods are utilized to determine the appropriate economic lives of the different asset accounts. One factor used in determining the appropriate lives of all accounts is an analysis of company planning data. This data is useful in assessing the near term portion of the life cycles of most assets, and is particularly useful when the technology is near the end of its life cycle.

A second factor used in assessing the life of an account is normal mortality, i.e., wear and tear with usage, deterioration with age, and accidental removal, breakage, or damage. The technique used to assess normal mortality is called Historical Mortality Analysis. For some accounts, like Motor Vehicles, company planning data and normal mortality alone are the major considerations in determining the life. In these cases, it is reasonable to assume that future characteristics of this type of plant will not differ significantly from the past.

In cases where a newer technology is substituting for an established embedded technology, use of company planning data and the Historical Mortality Analysis alone to assess the life will generally result in an inappropriately long life. Over the long term, the substitution of a new technology for the old is the primary force driving the displacement of the old technology. Therefore, after initial deployment of the new technology, life analysis techniques that take into account the technological substitution must also be used. These technology-sensitive accounts (that is, Digital Electronic Switching, Circuit-Digital, Circuit-Analog, Aerial Metallic Cable, Underground Metallic Cable, Buried Metallic Cable) comprise a large percent of the companies' total plant investment.

d. FCC Prescribed Lives

Lives prescribed by the FCC for interstate depreciation purposes are not appropriate for use in universal service cost calculations. These prescribed lives, particularly for the technology-sensitive accounts, are simply too long. They are based on the old regulatory paradigm in which plant lives were artificially lengthened beyond their true economic lives so that the investment in that plant would be recovered in smaller year-to-year increments over longer periods of time. The assumption under this paradigm was always that the telecommunications companies were entitled to and would recover all of their investment, but over a longer period of time, thus reducing the amount the customer paid in the short term. In this respect, depreciation became a source of implicit support for low priced basic residential service. Like other sources of implicit support, depreciation policy must be adjusted to reflect the realities of the increasingly competitive marketplace.

In today's increasingly competitive environment, however, the marketplace is not likely to allow the companies to recover investment based on lives that are inappropriately long. The rapid changes in technology, which must be embraced in order to stay competitive, shorten asset lives significantly beyond what the FCC has prescribed. The companies have emphasized to the FCC that substantially more progress is needed in moving to lives that adequately reflect the current pace of technology and competitive changes.

Using lives prescribed in the past by the FCC seems particularly inappropriate as the FCC is acknowledging the need to examine its depreciation practices. The Commission has, on several occasions, stated that it has plans to initiate a separate proceeding to undertake a comprehensive review of its depreciation rules. Proposed 1998 review proceedings include a consideration of streamlining or eliminating the Commission's methods for prescribing depreciation rates. In this environment of rapid technological evaluation and increasing competition, the economic forward-looking lives embraced by each company are more appropriate than those prescribed by the FCC in the past.

e. FCC Ranges for Lives and Future Net Salvage Percentages

As part of CC Docket No. 92-296, the FCC issued a Notice of Proposed Rulemaking in which it stated that it was continuing its efforts to reduce unnecessary regulatory burdens and their associated costs by undertaking simplification of the depreciation prescription process. As a part of this effort, ranges of projection life and future net salvage estimates were set up for most of the asset accounts.

Under this procedure, if a company is meeting certain predetermined criteria and proposes to use projection lives or future net salvage estimates from within these ranges, the company need not submit the voluminous, detailed supporting data otherwise required. The purpose of this simplification effort was to lessen paperwork and the cost of unnecessary regulation. Simplification was not designed to set restrictions on lives that companies would be able to use in the calculation of universal service costs years into the future. Ranges were generally developed by taking one standard deviation around the mean of the lives and salvage values that the Commission had prescribed most recently for the various accounts for the local exchange carriers. These ranges were based on represcriptions during 1990-1994, and they have not been updated since. Lives prescribed in 1990-1994 could hardly be considered forward-looking today.

The FCC's Universal Service Order requires use of economic lives and future net salvage percentages within the FCC-authorized range. It is clear that the appropriate lives to use in depreciation calculations in a forward-looking cost study are economic lives. In some cases, however, these lives (particularly for the major technology-sensitive accounts) are shorter than the ranges. Lives within the FCC-authorized range fall short of reflecting forward-looking economic costs. The Commission has apparently recognized this fact, since the FCC has prescribed lives shorter than the range in many states for several accounts, including all the major technology-sensitive accounts. Reverting to lives and salvage values within the outdated FCC range now would be an inappropriate step backwards.

5. Cost of Installing Outside Plant - Comments on Dr. Gabel's Analysis

Comments on Dr. Gabel's paper are included in Attachment 1.

Respectfully submitted,

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BCPM Sponsors' Comments

Regarding David Gabel Paper

Estimating the Cost of Switching and Cable Based on Publicly Available Data

National Regulatory Research Institute, Ohio State University, February 1998.

INTRODUCTION

Key Points in Analysis of Gabel's Study:

1. The National Regulatory Research Institute (NRRI) study in several areas critiques BCPM versions other than the BCPM 3.1. In Chapter 2, the authors present BCPM 1.1 cost tables and then draw conclusions about the BCPM installation cost methodology based on an examination of "BCM2", an early predecessor to BCPM. In Chapter 3, the authors critique the BCPM 1.1 switching algorithms which have been replaced by an entirely new switch module in later versions of BCPM. Thus, Dr. Gabel's arguments are completely irrelevant. The bulk of Dr. Gable's comments about cable costs are addressed to BCPM 3.0.
2. The study presents information developed on a national basis.
3. The information was drawn from the public domain and represents information drawn from the Rural Utilities Service (RUS), since there is no significant amount of publicly available data available for the larger telecommunications companies.
4. The Federal Communications Commission (FCC) supports the need to develop costs actually incurred and, in fact, allows company-specific studies.
   - The costs provided should reflect the actual experience and documented facts related to a non-rural LEC's costs in its study area as is done in the BCPM 3.1.
   - The FCC has indicated that a separate process will be developed for rural telephone companies; Dr. Gabel's analysis may have more application in that process.

5. Dr. Gabel's model violates the FCC's guidelines for cost proxy models in several important ways. Use of this data as input would prevent the proxy models from complying with FCC guidelines for state cost studies.

    - The inputs take away the flexibility to change certain critical model assumptions, because they contain inherent assumptions about network engineering design.
    - They provide no assurance that the cost characteristics represent forward-looking design.
    - The estimates provide an insufficient level of detail, taking away the ability to meaningfully identify service specific costs and defeating the goal of geographic deaveraging.

PURPOSE AND OVERVIEW

The stated purpose of the NRRI report is to provide cost estimates for use in determining costs for universal service and unbundled network elements for new entrants. Additionally, the study's objective was to develop these cost estimates using independent (i.e. not provided by proxy model proponents) publicly available data. The FCC has issued extensive guidelines for cost methodology and platform design to be used in cost proxy models for determining Universal Service support levels. In its Universal Service Report and Order, the Commission established ten criteria that would be used to evaluate cost studies submitted by the states.[1] The FCC's Further Notice of Proposed Rulemaking (FNPRM), released July 18, 1997, established a process for evaluating the BCPM and Hatfield models with the objective of developing a platform that meets the FCC's specified criteria.[2] As part of the rulemaking process, the FCC Common Carrier Bureau

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[1] FCC Report and Order, "In the Matter of Federal-State Joint Board on Universal Service", CC Docket No. 96-45, released May 8, 1997.

[2] FCC Further Notice of Proposed Rulemaking, "In the Matter of Federal-State Joint Board on Universal Service", CC Docket No. 97-45 and Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, CC Docket No. 97-160, July 18, 1997.

(Bureau) in a Public Notice dated September 3, 1997, prescribed guidelines regarding switching, transport, and signaling for cost proxy models under consideration.[3] Another Public Notice, released on November 13, 1997, provided specific guidelines for customer location and outside plant portions of the models.[4]

Since the stated purpose of the NRRI study's cost estimates is for use in the cost proxy models under consideration by the Federal Communications Commission, we evaluated the study's compliance with the FCC's criteria for cost models.

The NRRI cost estimates are under consideration as inputs to the cost proxy models, not as standalone models themselves. However, as input to the proxy models, Dr. Gabel's model violates the FCC's guidelines in several important ways. The inputs take away the flexibility to change certain critical model assumptions, because they contain inherent assumptions about network engineering design. They provide no assurance that the cost characteristics represent forward-looking design. The estimates provide an insufficient level of detail, taking away the ability to meaningfully identify service specific costs and defeating the goal of geographic deaveraging. Use of this data as input would prevent the proxy models from complying with FCC guidelines for state cost studies.

Dr. Gabel asserts that it is mandatory that new and independent data be developed for use in cost proxy models. However, he fails to recognize there is an inherent danger in using non-company specific data. Information developed on a national basis can not, by its very nature, produce a fair and accurate representation of the costs that a non-rural LEC will incur in providing universal service in its specific study area. The fact that no

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[3] FCC Public Notice, "Guidance to Proponents of Cost Models in Universal Service Proceeding: Switching, Interoffice Trunking, Signaling, and Local Tandem Investment", CC Docket Nos. 96-45 and 97-160, September 3, 1997.

[4] FCC Public Notice. "Guidance to Proponents of Cost Models in Universal Service Proceeding: Customer Location and Outside Plant", CC Docket Nos. 96-45 and 97-160, November 13, 1997.

large volume of *public domain* data is available about costs experienced by larger companies operating in territory with a broader mix of service density does not mean that these RUS costs should be used.

Dr. Gabel further implies that in order for this information to be validated by independent parties, only data from the public domain is relevant. He concludes that because data is labeled as proprietary, it is unavailable for review. This is incorrect; any party willing to sign a nondisclosure agreement is allowed direct access to the data and its underlying source. Furthermore, the BCPM sponsors will augment the general information with subject matter expert interpretations and explanations. This by no means should be construed as "value judgments" as Dr. Gabel infers. To the contrary, this information is based on actual experience and documented facts related to each LEC's costs in providing service in its study area. The proprietary data used by the BCPM sponsors is vendor-specific discount rates and material prices, which is information that, because of contractual agreements with those vendors, must be protected.

Dr. Gabel further exacerbates the inaccuracies of his analysis by relying upon information gleaned from the Rural Utilities Service. Members of the RUS include rural telephone providers and small independent telephone companies. The BCPM sponsors are non-rural providers of telephone service. Thus, any cost relationship developed from this data does not reflect the costs each sponsor will incur in providing service in its study area.

The FCC supports the need to develop costs that most closely reflect the costs that companies will actually incur in providing universal service. First, in Public Notice 97-2383, the FCC allows states to file company-specific studies. Additionally, the FCC has indicated that a separate process will be developed to handle rural telephone companies. In light of these two facts, Dr. Gabel's analysis appears to be inappropriate for non-rural LECs.

The BCPM sponsors will address some of the specific problems noted in Dr. Gable's study in the remainder of this Response.

DISCUSSION

1. Cables

The NRRI cable cost functions, while properly reflective of the engineering standards established by RUS for its client companies, are not compatible with the engineering designs used in either BCPM 3.1 or HAI 5.0a.

A. Study Reflects Rural Cost Characteristics Only

The most serious concern with the NRRI study is that its cable costs reflect the engineering methods, equipment selections, and geographical conditions of rural companies. As such, the usefulness of the data for non-rural carriers is doubtful. There are very real differences between urban and rural conditions in terms of population density (affecting economies of scale), constraints on placement (affecting plant mix and equipment selection), and loop distance (affecting engineering design). Urban and suburban plant placement would require more cutting and restoring of asphalt, for example, than does rural placement. The authors concede that "the data provide only limited insights into the cost of serving urban territories" and "caution must be exercised when parameter estimates from a data set are used to forecast costs for areas that are too dissimilar to those from which the data was obtained."[5] Furthermore, rural cost characteristics for small carriers are not applicable to large LECs, as explained below.

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[5] Gabel, D. and Kennedy, S., Estimating the Cost of Switching and Cables Based on Publicly Available Data, The National Regulatory Research Institute (NRRI), April, 1998 ("NRRI study") at 35. Available: http//www.nrri.ohio-state.edu.

B. *Study Reflects RUS Engineering Methodology and Vendor Selection*

As indicated in the table below and also explained in the study, the NRRI results represent a blend of primarily 22 and 24 gauge cables. This is a logical result of RUS design conventions, which allow for 18 kilofoot loops and 18 kilofoot distribution cables without extended range line cards. The study does not provide separate material costs for different gauges of cable. As a result, the data cannot be used for evaluating alternative outside plant designs, for example a 12 kilofoot breakpoint vs. the 18 kilofoot breakpoint, or use of extended range line cards vs. standard line cards. The data are only valid for use under the RUS engineering conventions.

In contrast to the RUS design specifications, BCPM models the network to generally provide a 12,000 foot loop from the DLC site to the customer. The BCPM Sponsors believe that this constraint is necessary to ensure quality service at a reasonable cost. The 12,000-foot grids are more economical in part because they typically require only 26 gauge cable for providing universal service.

Additionally, the price structure is based on typical predominance of work in a specific area for a set time, generally three years. Determining factors which influence costs are depth and volume while the difficulty of placement is gauged by the contractors during the bidding process. The soil type or water table is not tracked even though the contractors consider the influence of such factors in their submitted bid. The contractor is given an exclusive contract for all identified work within certain exclusion items.

In the Buried Cables (page 32) section, the NRRI Study indicates that in Dr. Gabel's analysis the majority of buried cable placement was by plowing. On a going forward basis, it is possible that plowing percentages will shrink in volume as more and more facilities are placed below ground. Also, plow method costs are not shared by other utilities since plowing equipment is typically not suited for placing multiple types of cables, for example telephone and electric cables, at the same time. Use of Dr. Gabel's data would violate the FCC' guidelines for cost proxy models because it includes inherent assumptions about the percentage of cable placement that is by plowing. The user cannot change the plowing percentages when this data is used. The percentages must be user-adjustable to allow the studies to reflect the proper mix of percentages for rural areas.

The FCC has specified that in order to support advanced services, the loop design must not include load coils.[6] However, because the contract material records provided in the Excel worksheet accompanying Dr. Gabel's analysis (used as input for the regressions) includes only cable, poles, and conduit, it is unclear from the paper whether loaded loop designs are reflected in the material costs.

Examples of equipment items included in the source database include:

- Pedestal units
- Serving Area Interface (SAI)
- Loading coil units
- Terminal blocks
- Many unknown loadings
- Ducts
- Manholes, handholes

Dr. Gable selected RUS companies in cooperation with Joel Schifman of the Maine Public Utility Commission.[7] No justification for the company selection is provided other than to say that the selections represent various soil and weather conditions and population densities. Curiously, the authors excluded data for Clark Fox Telecommunications of Montana based on *Mr. Schifman's* conclusion that Clark Fox's costs were atypically high because the serving area in question includes a national park. Apparently, Clark Fox was not consulted for its opinion on this. The authors implicitly

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[6] Report and Order .

[7] NRRI Report at 4.